
# FROM SKATE TO SEA DART

## CONVAIR & THE USA's SEAPLANE STRIKING FORCE CONCEPT

## Part 1 / 1946-52

**Naval aviation specialist MATTHEW WILLIS opens a two-part series on the development of the US Navy's Cold War-era Seaplane Striking Force concept — envisioned to offer a water-based tactical strike component for flexible global operations — with the research programme undertaken by Convair to explore the feasibility of the waterborne jet fighter**

CONVENTIONAL WISDOM has it that the Second World War sounded the death-knell for mainstream waterborne aircraft, both civil and military, confining them to niche roles. In fact, the dawning of the jet age promised to spur a renaissance for seaplane warfare. The US Navy developed ambitious plans for a "Seaplane Striking Force" and attendant logistical arm for more than a decade after the end of the war. In the mid-1950s the Consolidated Vultee Aircraft Corporation (Convair) made a proposal to the US Navy for a highly mobile strike force based around a supersonic seaplane attack fighter carrying nuclear weapons. It was an audacious scheme that was intended to complement conventional carrier-based forces and "bear the relationship to the Navy's seaplane bombers that the tactical aircraft of the Air Force bear to the long-range strategic bombers."

Seaplane fighter and attack aircraft have had a long and often obscure history, despite the development of the aircraft carrier promising to make the idea obsolete. In the First World War, air arms from several nations developed small fighting floatplanes or flying-boats for coastal defence and/or protecting fleets and convoys from long-range aeroplanes and airships. The concept persisted through the inter-war period and into the Second World War. The Imperial Japanese Navy Air Force used Nakajima A6M2-N *Rufe* floatplane fighters during its campaigns in the Aleutians and Solomons. The USA and Britain tested floatplane fighters and fighter-bombers, but none reached operational service. The USA's Naval Aircraft Factory (NAF) produced a design for a "convoy interceptor" that used the buoyancy provided by watertight wings to eliminate floats. However, the necessary compromises to raise the propeller well above the water meant the design suffered from very high aerodynamic drag.

None of the Allied plans came to fruition, and when the *Rufe's* replacement, the Kawanishi N1K *Rex*, proved unable to mix it with Allied fighters or intercept bombers, it seemed that the idea may have run its course. Amphibious landings could be supported by carrier-based fighter-bombers operating from comparatively dispensable escort carriers, with no risk to important fleet carriers. However, the development of the jet engine largely ended the smaller escort carrier's usefulness, as even the smallest, lightest jet fighters could not operate from them. Furthermore, it was apparent by the early 1950s that the next generation of jet aircraft would be too large, heavy and powerful to operate even from light fleet carriers such as the *Independence*-class.

Meanwhile, the US Navy was committed to building ever-larger carriers to keep up with larger and higher-performance jet aircraft, the extreme being the proposed *United States*-class to carry strategic nuclear bombers. The increasing cost, size and importance of these fleet carriers, however, meant that operating inshore was even less viable than during the Second World War. The parallel ongoing development of nuclear weapons threatened to make the large aircraft carrier and its associated task group vulnerable in the extreme.

At the same time, the jet engine opened up a new range of possibilities that various companies sought to exploit, none more than Convair. The manufacturer and its predecessor, Consolidated, had established itself as the leading designer of flying-boats during the war, and it was keen to retain that position in the post-war world. At the same time, the company's engineers were acutely aware that the development of waterborne aircraft lagged behind that of their land-based counterparts, and that considerable advances had to be made to regain parity in performance.

### A NEW ERA FOR WATER OPERATIONS

New design approaches and the introduction of the jet engine offered a range of new possibilities. The jet engine's high power-to-weight ratio relative to piston engines meant that design solutions that had previously been impractical were now back on the table. Additionally, the need to provide clearance for a propeller was no longer a problem. Perhaps surprisingly in view of the accelerated demise of high-performance waterborne aircraft after the Second World War, in the mid-to-late 1940s the jet, with the addition of other developments in design, promised to help eradicate the severe compromises hitherto inflicted on waterborne aircraft.

Convair was given a contract by the Navy's Bureau of Aeronautics (BuAer) in 1946 to develop future concepts for waterborne aircraft, using the extensive open-water testing facilities the company had created in San Diego, California, during the war. This capability represented a huge investment in time and money to allow model testing in "real world" conditions that could not be replicated in the windtunnel or test-tank. It was, however, much harder to control variables, and the testing facilities, formed under the ægis of the Convair Hydrodynamic Research Group (CHRG), took years to perfect after their introduction in 1943.

The CHRG proved the possibility of establishing the hydrodynamic characteristics of a full-size aircraft with studies based on the Consolidated Model 31/XP4Y prototype flying-boat, and then embarked on a long-term study of a generic four-engined flying-boat model that could be fitted with different fuselages to test a range of configurations. The models had